SAMPLING AND QUALITY ASSURANCE PLAN I

BAYONNE BARREL AND DRUM SITE
NEWARK, ESSEX COUNTY, NEW JERSEY

RESIDUAL PRODUCT SAMPLING OF
POTENTIAL RESPONSIBLE PARTY DRUMS

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Prepared for:

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SAMPLING AND ANALYSIS PLAN
BAYONNE BARREL AND DRUM SITE
NEWARK, ESSEX COUNTY, NEW JERSEY

1.0 BACKGROUND

The Bayonne Barrel and Drum Site (BB&D) is a former drum reconditioning facility occupying approximately 15 acres off Raymond Boulevard in the Ironbound section of Newark, New Jersey (see Figure 1). The facility operated as an unlicensed Treatment, Storage, and Disposal (TSD) facility from the early 1940's until the early 1980's when the company filed for bankruptcy under Chapter 11. The site is bordered to the north and west by Routes 1 and 9, to the east by the New Jersey Turnpike and to the south by a movie theater.

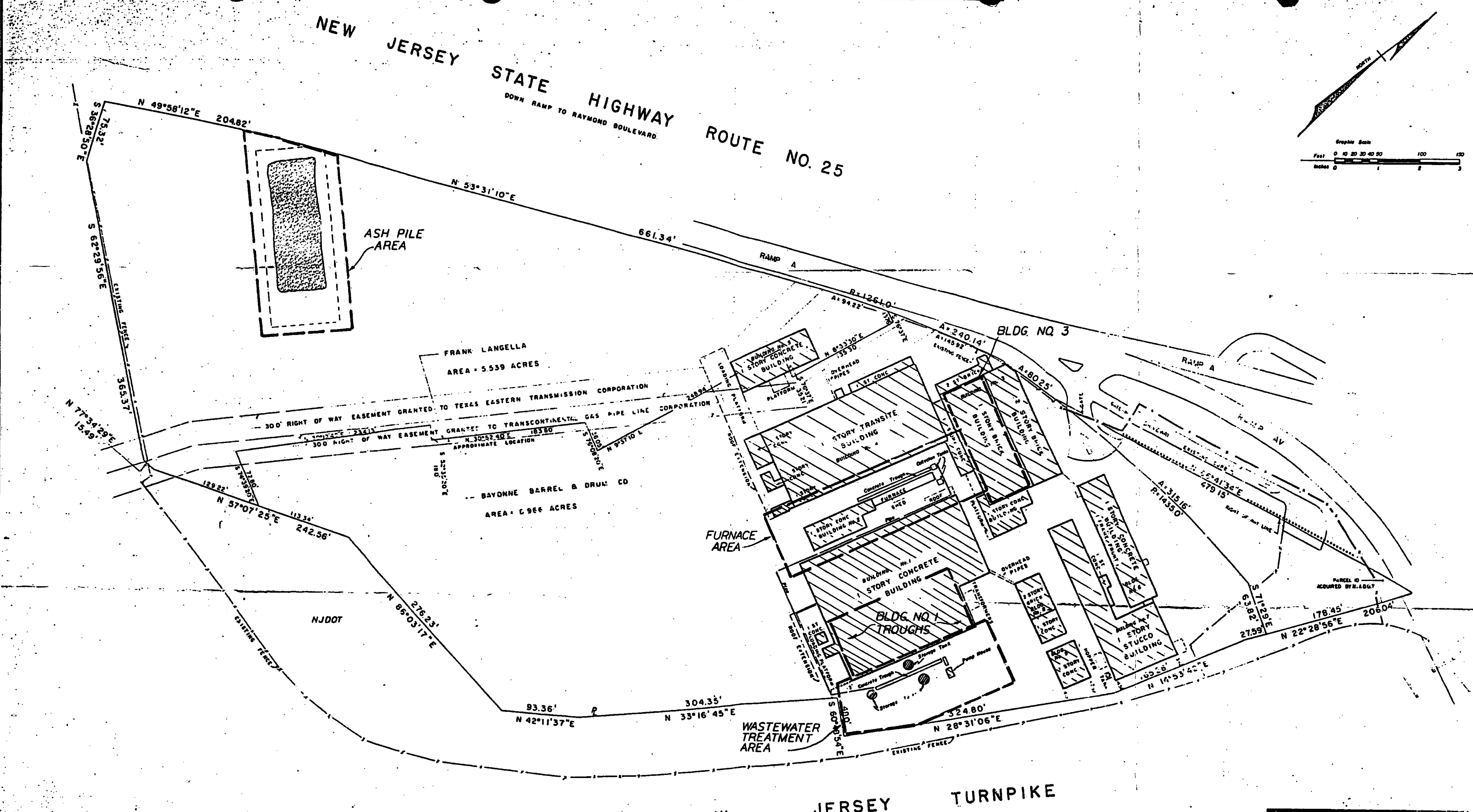
Operations conducted by Bayonne Barrel and Drum included the cleaning and reconditioning of drums using caustic solutions and incineration. These operations produced spent solution, incinerator ash and sludges. The storage of these waste products as well as the storage of drums awaiting reconditioning provided the potential for contamination at the site. The drums, after incineration, were either sold or stored in the southwest end of the site. It is estimated that approximately 45,000 of these "RCRA empty" drums are currently located on-site. However, during the removal of these drums, it has been determined that most of the drums are not RCRA empty, but in fact still contain various unknown liquid products.

2.0 PROJECT SCOPE AND DATA OBJECTIVES

The data generated from this sampling and analyses project will be used to characterize hazardous waste labelled potential responsible party (PRP) drums and determine if residual drum products are RCRA hazardous wastes or CERCLA hazardous substances and have contributed to the existing soil conditions on-site. Chemical compounds identified will be used to evaluate PRP attributability for cost recovery.

Forty-seven (47) drum samples, including three (3) field duplicates will be sampled and analyzed for Target Compound List (TCL) and Target Analyte List (TAL) constituents. In all, thirty-four (34) solid/sludge drum residual samples and thirteen (13) liquid residual samples will be taken. Sample volumes will be one (1) 8-oz. glass jar for TCL, and one (1) 8-oz. glass jar for TCL. Triple volume will be collected from three (3) drums to include Matrix spike/matrix spike duplicate (MS/MSD) samples.

NEWARK, ESSEX COUNTY, NEW JERSEY



NOTE;
DATA FOR MEETS AND BOUNDS, EXISTING STRUCTURES AND PROPERTIES LOCATED ON THIS DRAWING COMPILED FROM DRAWING BY BORRIE, McDONALD & WATSON, SURVEYORS. Feb. 29, 1972

SOLID WASTE MANAGEMENT UNITS

BAYONNE BARREL & DRUM COMPANY
150 Raymond Blvd., Newark, New Jersey, 07105

Diversified Environmental Resources Inc.
1440 Pennington Road
Trenton New Jersey 08618

Drawn By WLH	Date 12/11/??
Checked By JS	Scale 1" = 5'
Project No 09-0183	Sheet No. 88-003

3.0 QUALITY ASSURANCE OBJECTIVES

As identified in Sections 1.0 and 2.0 the objective of this sampling event applies to the following parameters:

Sample Parameter/Fraction	Matrix	Analytical Method Reference	Holding Time (Days)	Volume
TCL				
VOLATILES (VOA)	Solid/Sludge	8240	10	incl. w/extr.
	Liquid	8240	10	incl. w/extr.
SEMI-VOLATILES (BNA)	Solid/Sludge	8250	10	1 X 8 oz.
	Liquid	8250	10	1 X 8 oz.
PCB/PEST/HERB	Solid/Sludge	8080	10	incl. w/extr.
	Liquid	8080	10	incl. w/extr.
TAL				
METALS	Solid/Sludge	7000	180	1 X 8 oz.
	Liquid	7000	180	1 X 8 oz.
CYANIDE	Solid/Sludge	9012	14	incl. w/metal
	Liquid	9012	14	incl. w/metal

NOTE:
1. Samples are low/medium concentration
2. Sample preparation methods for TCL fractions; SW-5030 (VOA) and SW-3510/3540 (BNA/PEST/PCB)
3. Sample preparation methods for TAL fractions; SW-3050 for all metals except cyanide
4. Limit of detection is analyte-specific.

4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Sampling Design

During the course of the Removal Action at Bayonne Barrel and Drum, the hazardous waste labelled drums encountered with residual product were segregated and staged for sampling in building #5. In order to minimize sampling costs, only one drum per PRP will be sampled according to its residual product volume.

All sampling will be conducted in accordance with applicable EPA Standard Operating Procedure (SOP). A copy of the drum sampling protocol SOP is attached as Appendix A. Drum sampling will be conducted in level C PPE, including Saranex coveralls, disposable nitrile sampling gloves and rubber booties, and an air purifying respirator. The downgrade to level C protection is based upon all drums being open-headed with negligible air monitoring readings.

4.2 Sampling Equipment

All sample containers will be specially-cleaned laboratory glassware, as directed under OSWER Directive 9240.0-05: Specifications and Guidance for Obtaining Contaminant-Free Sample Containers (July 1989). The outside of the sample jars will also be wiped clean to prevent possible spread of contamination beyond the decontamination zone. Plain paper napkins will be utilized for the wipe-down process.

Sampling equipment includes glass drum thieves and coliwasas for the liquid samples and plastic scoops for the solid/sludge samples. Decontamination of sampling apparatus between sample locations is not necessary since all sampling equipment is disposable.

4.3 Standard Operating Procedures (SOPs)

In addition to the drum sampling protocol SOP, other standard operating protocols will be adhered to, including field log book, sample labels, chain of custody records and chain of custody seals.

4.3.1 FIELD LOG BOOK

The Field Log Book details site activities and observations such that it can account for field procedures and pertinent information in the transcriber's absence. All entries will be dated and signed by the transcriber and will be maintained by the sampling contractor. The following information will be recorded:

1. Site name and project number;
2. Name(s) of personnel on-site;
3. Dates and times of all entries (military time);
4. Descriptions of all site activities, including site entry and exit times, noteworthy events and discussions, site observations;
5. Weather conditions;
6. Identification and description of samples and locations;
7. Subcontractor information and names of on-site personnel;
8. Date and time of sample collections, along with chain-of-custody information;
9. Sample locations, sampling equipment and other equipment used to make field measurements;
10. Calibration data for equipment;
11. Calculations and results;
12. Record of photographs;
13. Site sketches.

4.3.2 SAMPLE LABELS

Each sample will be accurately and completely identified. All labels will be moisture-resistant and able to withstand field conditions. Sample containers will be labeled prior to sample collection. The information on each label will include the following, but is not limited to:

i. Date/time of collection;
ii. Sample identity/location;
iii. Analysis requested.

4.3.3 CHAIN OF CUSTODY RECORD

EPA chain-of-custody records will be completed and maintained throughout the entire site activities as per TAT Standard Operating Procedures (SOP) on sample handling, sample container contract specifications, and EPA Laboratories SOP. The chain-of-custody form to be used lists the following information:

i. Sample number;
ii. Number of sample containers;
iii. Description of samples including specific location of sample collection;
iv. Identity of person collecting the sample;
v. Date and time of sample collection;
vi. Date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);
vii. Identity of person accepting custody (if the sample was collected by a person other than the laboratory personnel);
viii Identity of laboratory performing the analysis.

4.3.4 CHAIN OF CUSTODY SEALS

Chain of Custody Seals demonstrate that a sample container has not been tampered with or opened.

The individual packaging the sample(s) must sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, must be noted in the Field Log Book.

4.4 Schedule of Activities

This sampling event is scheduled to occur on Thursday, March 9, 1995. The samples will also be delivered to the selected laboratory on this date for TCL/TAL analyses.

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator (OSC), Joe Cosentino, or his designated alternate will provide EPA TAT Region II Contractor, Roy F. Weston, Inc. concerning project sampling needs, objectives, and schedules.

The TAT Project Manager, Mark Denno, is the primary point of contact with the EPA OSC. The project manager is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

The TAT Sample Management Officer/Site QC Coordinator, Heidemarie Adenau, is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations from the plan.

The TAT Analytical Coordinator, Smita Sumbaly, is responsible for soliciting laboratories for analytical services and data validation.

6.0 QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS

The contracted laboratory must conduct its analyses with a quality assurance/quality control (QA/QC) Level 2 (QA-2). In order to ensure accurate data, the following measures are required:

1) Sample Documentation;
2) Chain of Custody;
3) Sample Holding Times;
4) Rinse & Field Blanks;
5) 5% Matrix Spike/Matrix Spike Duplicate;
6) Confirmation Analysis;
7) Initial & Continuing Instrument Calibration;
8) Detection Limits;
9) Data Summary.

All analytical results are to be submitted by the laboratory to the Roy F. Weston, Inc. Analytical Coordinator. A verbal report will be submitted within twenty-one (21) calendar days of the date the laboratory received the samples for TCL/TAL analysis, followed by a written report within twenty eight (28) calendar days.

7.0 DELIVERABLES

A trip report will be prepared by the Project Manager highlighting the sampling activities and pertinent occurrences and delivered to the OSC within one week of the sampling event. Once the raw data has been received from the laboratory, an analytical package will be provided to the OSC.

8.0 DATA VALIDATION

All steps of data generation and handling will be evaluated by the On-Scene Coordinator (OSC), the Project Manager, and the Quality Assurance Officer for compliance with EPA Region II SOP for validating hazardous waste site data.

9.0 SYSTEM AUDIT

The Quality Assurance/Quality Control (QA/QC) Officer or a designated representative will observe the sampling operations and review subsequent analytical data to assure that the QA/QC project plan has been followed.

10.0 CORRECTIVE ACTIONS

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the sampling program. Any deviations from this sampling plan will be noted in the final report.

APPENDIX A

DRUM SAMPLING SOP

DRUM SAMPLING STANDARD OPERATION PROCEDURE

1.0 SCOPE AND APPLICATION

The purpose of this procedure is to provide technical guidance on implementing safe and cost-effective response actions applicable to hazardous waste sites containing drums. Container contents are sampled and characterized for disposal, bulking, recycling, grouping, and/or classification purposes.

2.0 METHOD SUMMARY

Prior to sampling, drums must be inventoried, staged, and opened. Inventory entails recording visual qualities of each drum and any characteristics pertinent to the contents' classification. Staging involves the organization, and sometimes consolidation of drums which have similar wastes or characteristics. Opening of closed drums can be performed manually or remotely. Remote drum opening is recommended for worker safety. The most widely used method of sampling a drum involves the use of a glass thief. This method is quick, simple, relatively inexpensive, and required no decontamination.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

- No preservatives shall be added to the sample
- Place sample container in two ziplock plastic bags
- Place each bagged container in a 1-gallon covered can containing absorbent packaging material. Place lid on can
- Mark the sample identification number on the outside of the can
- Place the marked cans in a cooler and fill remaining space with absorbent packing material
- Fill out chain of custody record for each cooler, place in plastic, and affix to inside of lid of the cooler
- Secure and custody seal the lid of the cooler
- Arrange for the appropriate transportation mode consistent with the type of hazardous waste involved

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

The practice of tapping drums to determine their contents is neither safe nor effective and should not be used if the drums are visually over pressurized or if shock-sensitive materials are suspected.

Drums that have been overpressurized to the extent that the head is swollen several inches above the level of the chime should not be moved. A number of devices have been developed for venting critically swollen drums. One method that has proven to be effective is a tube and spear device. A light aluminum tube (3

meters long) is positioned at the vapor space of the drum. A rigid, hooking device attached to the tube goes over the chime and holds the tube securely in place. The spear is inserted in the tube and positioned against the drum wall. A sharp blow on the end of the spear drives the sharpened tip through the drum and the gas vents along the grooves. The venting should be done from behind a wall or barricade. This device could be cheaply and easily designed and constructed where needed. Once the pressure has been relieved, the bung can be removed and the drum sampled.

5.0 EQUIPMENT/APPARATUS

The following are standard materials and equipment required for sampling:

- Health and Safety Plan
- Personnel protection equipment
- Wide-mouth glass jars with teflon cap liner, approximately 500 ml. volume
- Uniquely numbered sample identification labels with corresponding data sheets
- One-gallon covered cans half-filled with absorbent
- Chain of custody sheets
- Decontamination plan and materials
- Glass thieving tubes and materials
- Drum opening devices:

Bung Wrench

A common method for opening drums manually is using a universal bung wrench. These wrenches have fittings made to remove nearly all commonly encountered bungs. They are usually constructed of cast iron, brass, or a bronze-beryllium, non-sparking alloy formulated to reduce the likelihood of sparks.

The use of a "NON-SPARKING" wrench does not completely eliminate the possibility of a spark being produced.

Drum Deheader

One means be which a drum can be opened manually when a bung is not removable with a bung wrench is by using a drum deheader. This tool is constructed of forged steel with an alloy steel blade and is designed to cut the lid of a drum off or part way off by means of a scissors-like cutting action. A limitation of this device is that it can be attached only to closed head drums. Drums with removable heads must be opened by other means.

Backhoe Spike

The most common means used to open drums remotely for sampling is the use of a metal spike attached or welded to a backhoe bucket. In addition to being very efficient, this method can greatly reduce the likelihood of personnel exposure.

Hyradulic Drum Opener

Recently, remotely operated hydraulic devices have been fabricated to open drums remotely. One such device is discussed here. This device used hydraulic pressure to pierce through the wall of a drum. It consists of a manually operated pump which pressurize soil through a length of hydraulic line.

Pneumatic Devices

A pneumatic bung remover consists of a compressed air supply that is controlled by a heavy-duty, 2-stage regulator. A high pressure air line of desired length delivers compressed air to a pneumatic drill, which is adapted to turn a bung fitting selected to fit the bung to be removed. An adjustable bracketing system has been designed to position and align the pneumatic drill over the bung. This bracketing system must be attached to the drum before the drill can be operated. Once the bung has been loosened, the bracketing system must be removed before the drum can be sampled. This remote bung opener does not permit the slow venting of the container, and therefore appropriate precautions must be taken. It also requires the container to be upright and relatively level. Bungs that are rusted shut cannot be removed with this device.

6.0 REAGENTS

Decontamination of sampling equipment should follow site specific work plan.

7.0 PROCEDURE

7.1 Drum Staging

Prior to sampling, the drums should be staged to allow easy access. Ideally, the staging area should be located just far enough from the drum opening area to prevent a chain reaction if one drum should explode or catch fire when opened.

During staging, the drums should be physically separated into the following categories: those containing liquids, those containing solids, lab packs, gas cylinders, and those which are empty. This is done because the strategy for sampling and handling drums/containers in each of these categories will be different.

This may be achieved by:

- Visual inspection of the drum and its labels, codes, etc. Solids and sludges are typically disposed of in open top drums. Closed head drums with a bung opening generally contain liquid.
- Visual inspection of the contents of the drum during sampling, followed by restaging, if needed.

Once a drum has been excavated and any immediate hazard has been eliminated by overpacking or transferring the drum's contents, the drum is affixed with a numbered tag and transferred to a staging area. Color-coded tags, labels or bands should be used to mark similar waste types. A description of each drum, it's condition, any unusual marking, and the location where it was buried or stored are recorded on a drum data sheet. This data sheet becomes the principal recordkeeping tool for tracking the drum onsite.

Where there is good reason to suspect that drums containing radioactive, explosive, and shock-sensitive materials are present, these materials should be staged in a separate, isolated area. Placement of explosives and shock-sensitive materials in diked and fenced areas will minimize the hazard and the adverse effected of any premature detonation of explosives.

Where space allows, the drum opening area should be physically separated from the drum removal and drum staging operations. Drums are moved from the staging area to the drum opening area one at a time using forklift trucks equipped with drum grabbers or a barrel grappler. In a large-scale drum handling operation, drums may be conveyed to the drum opening area using a roller conveyer.

7.2 Drum Opening

There are three basic techniques available for opening drums at hazardous waste sites:

- Manual opening with nonsparking bung wrenches
- Drum deheading
- Remote drum puncturing or bung removal

The choice of drum opening techniques and accessories depends on the number of drums to be opened, their waste contents, and physical condition. Remote drum opening equipment should always be considered in order to protect worker safety. Under OSHA 1910.120, manual drum opening with bung wrenches or deheaders should be performed ONLY with structurally sound drums and waste contents that are known to be not shock sensitive, non-reactive, non-explosive, and non-flammable.

7.2.1 Manual Drum Opening

7.2.1.1 Bung Wrench

Manual drum opening with bung wrenches should not be performed unless the drums are structurally sound (no evidence of bulging or deformation) and their contents are known to be nonexplosive. If opening the drum with bung wrenches is deemed reasonable cost-effective and safe, then certain procedures should be implemented to minimize the hazard:

- Field personnel should be fully outfitted with protective gear
- Drums should be positioned upright with the bung up, or, for drums with bungs on the side, laid on their sides with the bung plugs up
- The wrenching motion should be a slow, steady pull across the drum. If the length of the bung wrench handle provides inadequate leverage for unscrewing the plug, a "cheater bar" can be attached to the handle to improve leverage.

7.2.1.2 Drum Deheading

Drums are opened with a drum deheader by first positioning the cutting edge just inside the top chime and then tightening the adjustment screw so the deheader is held against the side of the drum. Moving the handle of the deheader up and down while sliding the deheader along the chime will enable the entire top to be rapidly cut off if so desired. If the top chime of a drum has been damaged or badly dented it may not be possible to cut the entire top off. Since there is always the possibility that a drum may be under pressure, the initial cut should be made very slowly to allow for the gradual release of any built-up pressure. A safer technique would be to employ a remote method prior to using the deheader. Self-propelled drum openers which are either electrically or pneumatically driven are available and can be used for quicker and more efficient deheading.

7.2.2 Remote Opening

Remotely operated drum opening tools are the safest available means of drum opening. Remote drum opening is slow, but provides a high degree of safety compared to manual methods of opening.

7.2.2.1 Backhoe Spike

Drums should be "staged" or placed in rows with adequate aisle space to allow ease in backhoe maneuvering. Once staged, the drums can be quickly opened by punching a hole in the drum head or lid with the spike.

The spike should be decontaminated after each drum is opened to prevent cross contamination. Even though some splash or spray may occur when this method is used, the operator of the backhoe can be protected by mounting a large shatter-resistant

shield in front of the operator's cage. This combined with the normal personal protection gear should be sufficient to protect the operator.

Additional respiratory protection can be afforded by providing the operator with an on-board airline system.

7.2.2.2 Hydraulic Devices

A piercing device with a metal point is attached to the end of a hydraulic line and is pushed into the drum by the hydraulic pressure. The piercing device can be attached so that a hole for sampling can be made in either the side or the head of the drum.

Some of the metal piercers are hollow or tube-like so that they can be left in place if desired and serve as a permanent tap or sampling port.

The piercer is designed to establish a tight seal after penetrating the container.

7.2.2.3 Pneumatic Devices

Pneumatically-operated devices utilizing compressed air have been designed to remove drum bungs remotely.

7.3 Drum Sampling

After the drum has been opened, preliminary monitoring of headspace gases should be performed using an explosimeter and organic vapor analyzer, In most cases it is impossible to observe the contents of these sealed or partially sealed vessels. Since some layering or stratification is likely in any solution left undisturbed over time, a sample must be taken that represents the entire depth of the vessel.

When sampling a previously sealed vessel, a check should be made for the presence of a bottom sludge. This is easily accomplished by measuring the depth to apparent bottom then comparing it to the known interior depth.

7.3.1 Glass Thief Sampler

The most widely used implement for sampling is a glass tube (Glass thief, 6mm to 16mm I.D. x 48 in. length). This tool is simple, cost effective, quick, and collects a sample without having to decontaminate.

Specific Sampling Procedure Using a Glass Thief

1. Remove cover from sample container.

2. Insert glass tubing almost to the bottom of the drum or until a solid layer is encountered. About 1 ft. of tubing should extend above the drum.

3. Allow the waste in the drum to reach its natural level in the tube.

4. Cap the top of the sampling tube with a tapered stopper or thumb, ensuring liquid with stopper.

5. Carefully remove the capped tube from the drum and insert the uncapped end in the sample container. Do not spill liquid on the outside of the sample container.

6. Release stopper and allow the glass thief to drain completely into the sample container. Fill the container to about 2/3 of capacity.

7. Remove tube from the sample container, break it into pieces and place the pieces in the drum.

8. Cap the sample container tightly and place prelabeled sample container in a carrier.

9. Replace the bung or place the pieces in the drum.

10. Transport sample to decontamination zone for preparation for transport to analytical laboratory.

In many instances a drum containing waste material will have a sludge layer on the bottom. Slow insertion of the sample tube down into this layer and then a gradual withdrawal will allow the sludge to act as a bottom plug to maintain the fluid in the tube. The plug can be gently removed and placed into the sample container by the use of a stainless steel lab spoon.

It should be noted that in some instances disposal of the tube by breaking it into the drum may interfere with eventual plans for the removal of its contents. The use of this technique should be cleared with the project officer or other disposal techniques evaluated.

7.3.2 COLIWASA Sampler

Designs exist for equipment that will collect a sample from the full depth of a drum and maintain it in the transfer tube until delivery to the sample bottle. These designs include primarily the Composite Liquid Waste Sampler (COLIWASA) and modifications thereof. The COLIWASA is a much cited sampler

designed to permit representative sampling of multiphase wastes from drums and other containerized wastes. On configuration consists of a 152 cm by 4 cm I.D. section of tubing with a neoprene stopper at one end attached by a rod running the length of the rube to a locking mechanism opens and closes the sampler by raising and lowering the neoprene stopper.

The major drawbacks associated with using a COLIWASA concern decontamination and costs. The sampler is difficult if not impossible to decontaminate in the field and its high cost in relation to alternative procedures (glass tubes) make it an impractical throwaway item. It still has applications, however, especially in instances where a true representation of a multiphase waste is absolutely necessary.

Procedures for Use

1. Put the sampler in the open position by placing the stopper rod handle in the T-position and pushing the rod down until the handle sits against the sampler's locking block.

2. Slowly lower the sampler into the liquid waste. (Lower the sampler at a rate that permits the levels of the liquid inside and outside the sampler tube to be about the same. If the level of the liquid in the sample tube is lower than that outside the sampler, the sampling rate is too fast and will result ia non-representative sample.)

3. When the sampler stopper hits the bottom of the waste container, push the sampler tube downward against the stopper to close the sampler. Lock the sampler in the closed position by turning the T-handle until it is upright and one end rests tightly on the locking block.

4. Slowly withdraw the sample from the waste container with one hand while wiping the sampler tube with a disposable cloth or rag with the other hand.

5. Carefully discharge the sample into a suitable sample container by slowly pulling the lower end of the T-handle away from the locking block while the lower end of the sampler is positioned in a sample container.

6. Cap the sample container with a Teflon-lined cap; attach label and seal; and record on sample data sheet.

7. Unscrew the T-handle of the sampler and disengage the locking block. Clean sampler.

8.0 CALCULATIONS

There are no specific calculations for these procedures.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

The following general quality assurance procedures apply:

1. All data must be documented on standard chain-of-custody forms, field data sheets, or within field/site log books.

2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

3. All deliverables will receive peer review prior to release.

The following specific quality assurance activity will apply:

Generally, one duplicate sample is collected for every ten samples collected. Other duplicates and spikes may be required depending on particular analytical parameter requested. See the site specific sampling plan for further QA/QC considerations.

10.0 DATA VALIDATION

The data generated will be reviewed according to the QA/QC considerations included in Section 9.0.

11.0 HEALTH AND SAFETY

The opening of closed containers is one of the most hazardous site activities. Maximum efforts should be made to ensure the safety of the sampling team. Proper protective equipment and a general awareness of the possible dangers will minimize the risk inherent to sampling operations. Employing proper drum opening techniques and equipment will also safeguard personnel. The use of remote sampling equipment whenever feasible is highly recommended.

Most drum sampling activities are performed in level B with additional splash protection. This includes:

- Protective coverall (saran Tyvek, PVC, acid suit, etc.)
- Hard hat
- SCBA
- Steel toe, steel shank boot (or latex booties covering steel tow work boots)
- Surgical gloves
- Solvent/acid resistant gloves
- Splash apron
- Face splash shield

For detailed descriptions of required levels of protection, see EPA/REAC Standard Operating Procedure #3012, "Hazardous Waste Site Investigations" and the site specific safety plan.

12.0 REFERENCES

Guidance Document for Cleanup of Surface Tank and Drum Sites, OSWER Directive 9380.0-3

Drum Handling PRactices at Hazardous Waste Sites, EPA-600/2-86-013.